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the cotton fleahopper

how
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control
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AUG 3 1970
U.S. AGRICULTURE

Leaflet No. 475
U.S. DEPARTMENT OF AGRICULTURE

the cotton fleahopper

how to control it

The cotton fleahopper[1] is an insect that feeds on the juices of buds, tiny squares, and other tender parts of the cotton plant. This pest may reduce yield, and in a severe, persistent infestation can destroy a crop.

The cotton fleahopper occurs in all the major cotton-producing States.

DEVELOPMENT

The cotton fleahopper has three life stages—egg, nymph, and adult.

In the fall, adult females lay eggs in weeds, usually in stems of croton. This plant, known as goatweed, is common throughout the Cotton Belt. The cotton fleahopper overwinters in the weeds, in the egg stage.

The eggs hatch in early spring. Newly hatched nymphs are white and translucent; they become pale green after feeding. They are about one twenty-fifth of an inch long, and have prominent, scarlet-colored eyes.

Nymphs shed their skins four times before becoming adults; each time they become larger. The last nymphal stage resembles the adult but does not have fully developed wings.

Adult cotton fleahoppers are about one-seventh of an inch long, and are winged. They are pale green and have small, dark spots on the body, and four black marks near the wingtips.

These insects feed and reproduce on tender weeds, such as evening primrose and horsemint. As the weeds mature and become less juicy, adult fleahoppers fly to cotton plants, which are usually in the presquaring or early fruiting stage.

The pests stay on cotton as long as the plants are succulent. When cotton becomes tough, the fleahoppers generally leave it and go to croton and other weeds to feed and lay eggs.

This insect may produce six to eight generations in a season.

Cold weather kills both adults and nymphs.

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[1] *Psallus seriatus.*

DAMAGE

The cotton fleahopper injures the entire cotton plant by feeding on juices from the tender parts. Leaves become ragged and deformed. Squares turn brown or black, and are shed when they are the size of a pinhead. Heavy infestations of fleahoppers restrict the growth of fruiting branches. Vegetative branches may develop abnormally in length or in number. Often, affected plants grow tall and whiplike.

If the cotton fleahopper is not controlled in early season, fruiting is delayed. Cotton plants then may be attacked for a longer time later in the season by other insects, particularly by the boll weevil, bollworm, and pink bollworm.

CONTROL

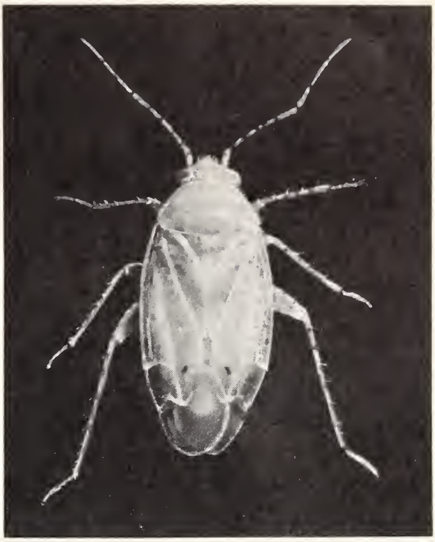
Applying an insecticide is the only practical means of controlling the cotton fleahopper. It is not practical to destroy weeds on which it feeds and develops.

Determining Need for Insecticide

Inspect plants to determine whether you need to apply insecticide. Make the first inspection as soon as the first tiny squares appear on the plants. Repeat inspections at least once a week until the crop is set.

If your field is 5 acres or less, make the inspection as follows:

Walk diagonally across the field; examine 3 or 4 inches of the main stem terminals of 100 plants; count the fleahoppers, both adults and nymphs.



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Adult cotton fleahopper.

On young plants just beginning to set squares, apply insecticide if you find as many as 10 to 15 cotton fleahoppers, adults and nymphs, per 100 terminals. On older plants the fleahopper count may reach as high as 30 to 35 before insecticide is needed.

In some areas, particularly in the West, inspections are made by sweeping tops of plants with a hand net. With this method, apply insecticide if you find 15 to 20 cotton fleahoppers per 100 net sweeps.

If your field is larger than 5 acres, make additional counts in different sections of the field.

Applying Insecticide

Effective insecticides for controlling the cotton fleahopper are available in either dusts or sprays.

Dusts

If you use a dust, apply one of the following at the rate of 10 pounds per acre, at these strengths: DDT, 5 percent; dieldrin, 1.5 percent; aldrin, 2.5 percent; BHC (gamma isomer), 1 percent; toxaphene, 10 percent; endrin, 1 percent; heptachlor, 2.5 percent; Guthion, 2.5 percent; malathion, 10 percent; Sevin, 10 percent; or Strobane, 10 percent.

If spider mites are likely to be a problem in your area, use a finished dust containing 40 percent or more of sulfur—or use a dust containing the recommended amount of some other suitable miticide.

If you apply dust with a ground machine, set nozzles 4 to 6 inches above the plants.

If you apply dust with an airplane, increase the rate of application to 15 pounds per acre. Limit the swath widths to the width of the plane's wings; flag or mark the swaths to insure thorough coverage.

Dust applications usually are more effective if made in early morning or late afternoon. Do not apply dust when wind velocity exceeds 4 to 5 miles an hour.

In 1958, in central Texas, several of the chlorinated hydrocarbon insecticides were considerably less effective against the cotton fleahopper than they were in previous years. Apparently, the insects had developed a degree of resistance to these insecticides. If such resistance occurs in your area, use DDT alone or mixed with one of the other chlorinated hydrocarbons—or use one of the organic phosphorus compounds, or use Sevin.

Sprays

If you spray, use one of the emulsifiable concentrates listed in the accompanying table. Mix the concentrate with enough water to give the proper dosage in accordance with the output of your spray

Concentrates for preparing sprays, and rates at which they are applied

Insecticides (as emulsifiable concentrates) and strength [1]	Amount of emulsifiable concentrate to be added to water to treat 1 acre
Chlorinated hydrocarbons	Pints
DDT, 2 pounds per gallon	2
Toxaphene, 6 pounds per gallon	1⅓
Strobane, 6 pounds per gallon	1⅓
Aldrin, 2 pounds per gallon	1
Heptachlor, 2 pounds per gallon	1
BHC (gamma isomer), 1.2 pounds per gallon	⅔
Endrin, 1.6 pounds per gallon	½
Dieldrin, 1.5 pounds per gallon	¾
Organic phosphorus compounds	
Malathion, 5 pounds per gallon	1½
Guthion, 1.5 pounds per gallon	1⅓

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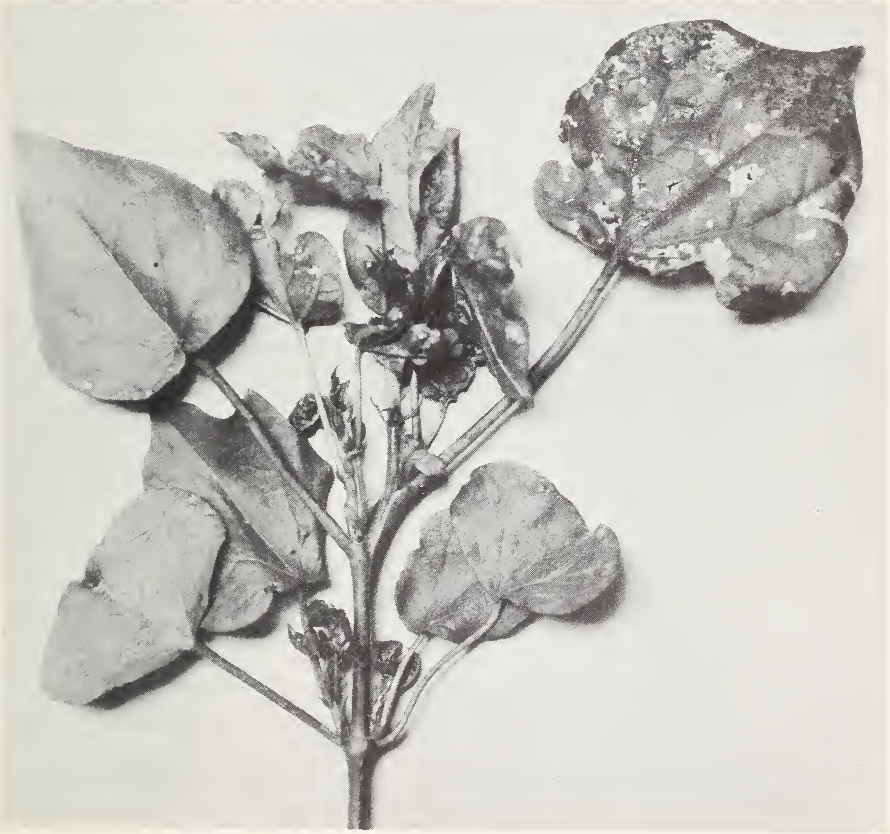
[1] Strength is stated in number of pounds of active ingredient per gallon of emulsifiable concentrate; these are the usual commercial formulations. If you buy an emulsifiable concentrate of a strength different from that stated in the table, use proportionately more or less of it.

machine. For example, if you are spraying with DDT, and your machine has a discharge rate of 3 gallons per acre, add 2 pints of DDT emulsifiable concentrate to each 2¾ gallons of water (see table).

To prevent runoff, apply sprays only when the leaves of plants are dry.

If you spray with a ground machine during the presquare and early fruiting stage, use one cone-type nozzle per row. During the main fruiting period, two or three nozzles per row may be required to insure thorough coverage. Set the nozzles 6 to 9 inches above the tops of the cotton plants. Apply 2 to 8 gallons of spray per acre, depending on size of the plants, at about 60 pounds pressure. With ground machines, you can apply sprays effectively in winds up to 15 miles an hour.

If you spray with an airplane, increase the per-acre amount of emulsifiable concentrate at least 50 percent. Limit swath widths to the wingspan of the plane. Flag or



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Cotton plant, showing excessive vegetative growth (top center) caused by fleahopper feeding in the terminals.

mark the swaths to insure thorough coverage. Do not spray with an airplane when wind velocity exceeds 8 miles an hour.

Cotton Fleahopper Plus Other Insects

In some areas, the cotton fleahopper is only one of a number of insects that attack cotton early in the season. Thrips, lygus bugs, and overwintered boll weevils may also be present in damaging numbers. The effect that these insects have on cotton during the early fruiting period varies from year to year and in different areas. A delay in early fruiting caused by these insects may be compensated for later in the season if growing conditions are favorable. However, where late-summer droughts or a short growing season make it desirable or essential for early fruiting, control of such insects is recommended when they are present in numbers that will prevent maximum set of early fruit. If you face this situation, adjust your insecticide program so it will control all the pests.

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If control of thrips is indicated, make the first insecticide application when cotton reaches the four-leaf stage, or earlier if necessary. Make two or three additional applications at weekly intervals.

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Some farmers prefer to omit the thrips applications and to concentrate against the fleahopper, lygus bugs, and overwintered boll weevils. If you prefer this program, make the first application when the first tiny squares appear. Make two or three additional applications at weekly intervals.

If boll weevils are a problem in your area, use any of the insecticides listed in the table—except DDT, which does not control the boll weevil.

For boll weevil control, double the dosage stated in the table for the last one or two applications if you use Strobane, toxaphene, or endrin. Triple the dosage if you use BHC.

In some areas, boll weevils are hard to kill with chlorinated hydrocarbons. If this is true in your area, use a mixture of 2 parts toxaphene and 1 part DDT, or use a phosphorus compound, or Sevin.

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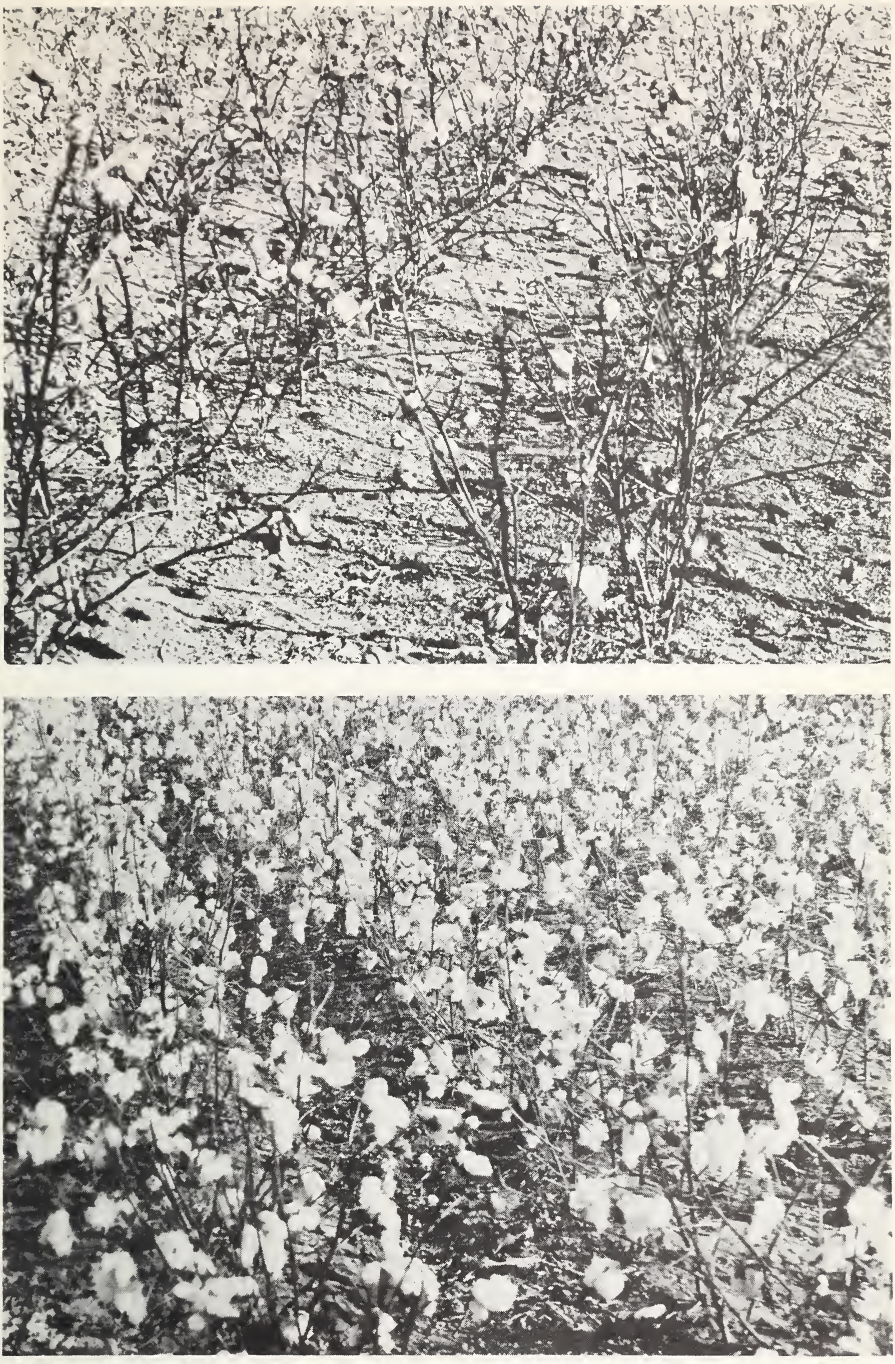
If the boll weevil is not a problem, use any of the insecticides listed in the table, at the dosage stated.

In this program, make your last application at least 30 days before the bollworm usually appears. This generally allows the development of beneficial insects that may kill bollworms.

If you have followed the above program, probably you will have no midseason fleahopper control problem. If infestations reach injurious levels in midseason, however, make one application of one of the insecticides recommended for fleahopper control. A single application usually gives control. More applications or greater dosages may kill beneficial insects that would help control bollworms later.

The cotton fleahopper may also infest your field, together with the



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Top: Untreated plot of cotton, showing damage by cotton fleahoppers. Bottom: Plot of cotton that was treated with insecticide for fleahopper control.

boll weevil or bollworm, later in the season. Under such conditions, apply an insecticide that controls the boll weevil, bollworm, or both. Any insecticide that is effective against the boll weevil or bollworm, except calcium arsenate, will control the cotton fleahopper.

PRECAUTIONS

Insecticides are poisonous to man and animals. Follow directions and heed all precautions on container labels.

If you get insecticide on your skin or clothing, remove clothing and bathe with soap and water. As soon as you have finished using insecticide, bathe and change clothing.

Do not open containers in closed rooms. Do not leave metal containers of emulsifiable concentrates in the sun.

Empty containers are particularly hazardous. Empty bags should be burned *in the open*, or buried. Liquid containers should be crushed and buried.

Protect food and feed crops from the drift of insecticides being applied for cotton fleahopper control.

To minimize losses of honey bees and other pollinating insects, make insecticide applications, if possible, during hours when bees are not visiting the plants. Avoid drift into bee yards and adjacent crops in bloom. Notify beekeepers at least 48 hours before dusting or spraying, so that measures can be taken to protect the bees.

To protect fish and wildlife, be careful not to contaminate streams, lakes, or ponds with insecticides. Do not clean spraying equipment, or empty excess spray material, near such water.

MORE INFORMATION

Information about controlling the cotton fleahopper and other insects that may be present with it can be found in the guide for controlling cotton insects, published by your State Agricultural Extension Service. The guide also tells when and how to use insecticides in your locality.

Other sources of information are your county agricultural agent, State Extension Service entomologist, or the U.S. Department of Agriculture, Washington 25, D.C.

Prepared by

ENTOMOLOGY RESEARCH DIVISION
AGRICULTURAL RESEARCH SERVICE

Washington, D.C. Issued July 1960

U.S. GOVERNMENT PRINTING OFFICE : 1960 O—542945

For sale by the Superintendent of Documents, U. S. Government Printing Office
Washington 25, D. C. - Price 5 cents